

SYSTEMATIC NOTES ON SOME BETHYLIDAE FROM BOTSWANA:
EPYRINAE (HYMENOPTERA: ACULEATA)

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Abstract.—*Calyozina caperata*, new species, is described from a unique male from Botswana; this is the first record of the genus in Africa. *Epyris breviscapus* Kieffer is transferred to *Trachepyrus*, and redescribed from both sexes.

Key Words: Hymenoptera, Bethylidae, *Calyozina*, *Trachepyrus*

The present contribution describes two of the more interesting species of Epyrinae collected for the Smithsonian in Malaise traps by Per Forchhammer, Serowe, Botswana. In an earlier paper on several species of Pristocerinae (Krombein 1989) I gave some notes on the ecology of the area where the collections were made.

The abbreviations used in the descriptions are as follows:

- LH—length of head from middle of clypeal margin to midpoint of vertex;
- WH—width of head including eyes;
- WF—width of front (i.e. least interocular distance);
- HE—height of eye measured in lateral view;
- EV—distance from top of eye to crest of vertex in lateral view;
- WOT—width of ocellar triangle including posterior ocelli;
- OOL—ocello-ocular line, least distance between posterior ocellus and inner eye margin;
- LT—length of thorax, collar excluded, from anterior margin of pronotal disk to posterior end of propodeum.

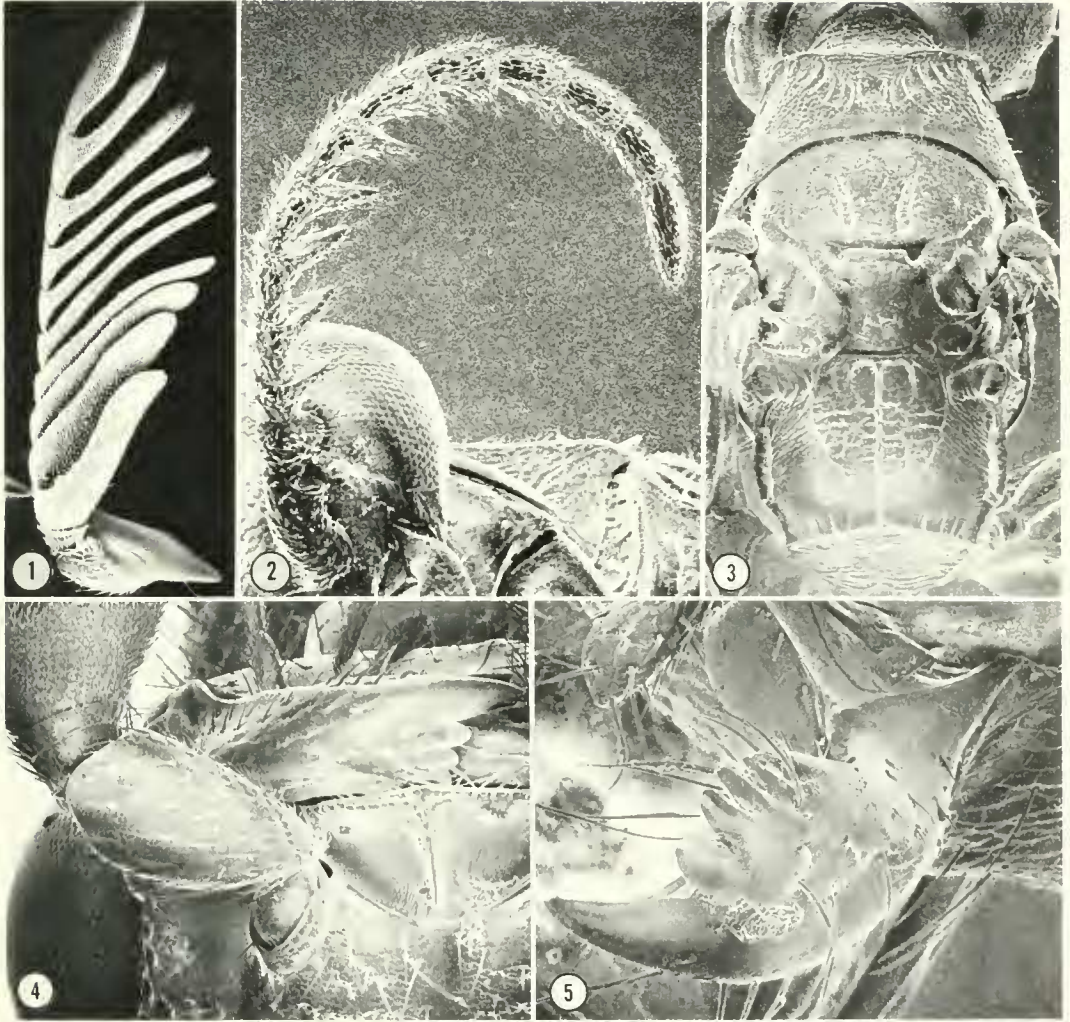
***Calyozina caperata* Krombein**

NEW SPECIES

Figs. 2, 3, 5-8

Male.—Length ca 2.5 mm (terminal abdominal segments estimated, removed before measurement), forewing 1.7 mm. Black, moderately shining, head and thorax finely alutaceous; mandible except teeth, scape, pedicel and first four flagellar segments beneath light red; basal antennal segments above, all of terminal segments, tegula and apical tarsal segments light brown; legs except tarsi darker brown; first four tarsal segments white. Vestiture of head and thorax sparse, short and suberect; flagellar segments above with short, suberect, moderately dense setae, apices of processes on first five flagellar segments with somewhat longer setae. Wings clear, stigma light brown, veins almost colorless.

Head: WH $1.09 \times$ LH; WF $1.22 \times$ HE and $0.61 \times$ WH; EV $0.41 \times$ HE; mandible (Fig. 5) stout, not so robust as figured because of foreshortening on micrograph, quinquedentate, apical tooth much longer than inner four; eyes not protuberant, inner orbits diverging slightly above, ocular setae short and quite sparse; front with tiny scat-

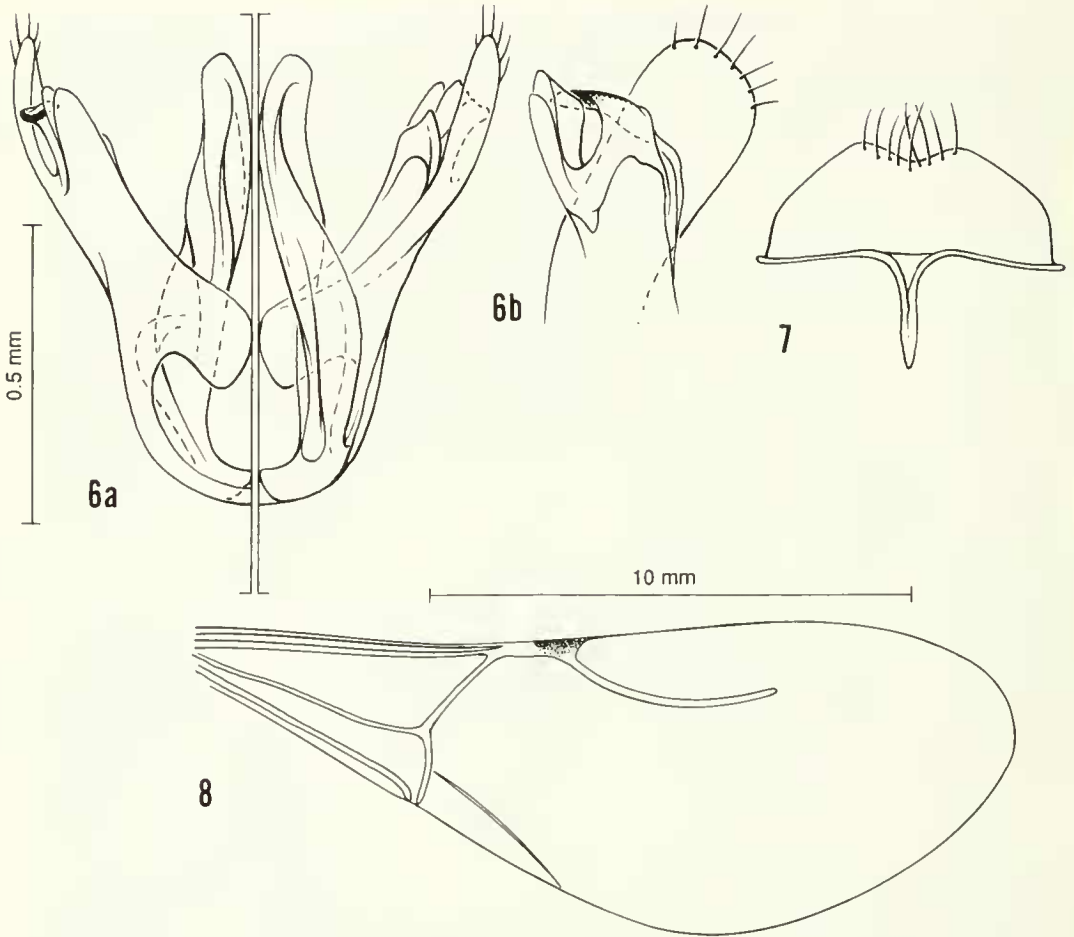


Figs. 1–5. Males of *Calyzoza staphylinoides* Westwood (?) from Kenya, and *Calyzina caperata* Krombein, holotype from Botswana. 1, Antenna, *C. staphylinoides* (?), 33 \times ; 2, antenna, *C. caperata*, 115 \times ; 3, dorsum of thorax, *C. caperata*, 75 \times ; 4, mandible and base of antenna, *C. staphylinoides* (?), 90 \times ; 5, mandible, *C. caperata*, 455 \times .

tered punctures and a slight protuberance above each antennal insertion, with a weak carina on each side extending obliquely from protuberance to lower inner eye margin; ocelli in a low triangle, frontal angle about 120°, OOL 0.79 \times WOT; vertex broadly rounded; occipital carina complete; antenna 13-segmented (Fig. 2), dorsal length of scape, pedicel and first two flagellar segments in a ratio about 25:12:11:13, first flagellar seg-

ment dorsally as long as wide; basal segments modified beneath, in profile pedicel is roundly protuberant beneath, flagellar segments 1–7 have an elongate projection at apex about three-fourths as long as segment on 2–4, somewhat shorter on 1 and 5, very short on 6 and 7, segments 8–11 not modified, subcylindrical, 11 about 1.4 \times as long as 10.

Dorsum of thorax (Fig. 3), LT 1.8 \times great-



Figs. 6-8. *Calyozina caperata* Krombein, holotype. 6a, Genitalia, ventral aspect at left, dorsal at right; 6b, lateral aspect, apices of paramere and volsella; 7, subgenital plate; 8, forewing.

est width (at pronotal lobes); pronotal disk with median length a fourth as long as greatest width, lateral fourth strongly carinate anteriorly, middle section a subtriangular raised area, surface adjacent to anterior carina and median raised area with short radiating rugae presenting a wrinkled appearance, disk posteriorly with sparse, scattered, tiny punctures, margin without transverse groove, sides not carinate, rounded to lateral declivous surface; side of pronotum carinate anteriorly on upper half; scutum with scattered tiny punctures, notauli well

developed on posterior two-thirds, converging slightly toward apex, parapsidal lines weak, present only on posterior half; scutellum anteriorly with a pair of pits connected by a deep narrow groove; propodeal disk $1.5\times$ as wide as median length, margined laterally by a weakly crenulate groove and carina, posterior margin strongly carinate, posterolateral corner foveolate, median discal carina complete, more strongly sculptured basal area about as long as wide, limiting carinae weak, rounded toward apex, surface with a few weak longitudinal carinae

at base, irregularly and mostly transversely rugulose posteriorly, areas adjacent to basal sculptured section closely, obliquely carinate, a narrow area anterior to posterior carina with weak, short, longitudinal carinae; posterior propodeal surface lacking a median carina; forewing (Fig. 8).

Abdomen not petiolate; subgenital plate (Fig. 7) short, apical margin weakly emarginate; genitalia (Fig. 6).

Female.—Unknown.

Discussion.—*Calyozina* Enderlein is presently known only from males of six species, the type-species, *ramicornis* Enderlein, from Taiwan, four Neotropical species described by Evans, *amazonica*, *azurea*, *mexicana*, *neotropica*, and *caperata* from Botswana. The included species are similar to males of *Calyoza* Westwood in having pectinate antennae with processes beneath at the apices of many of the flagellar segments (cf Figs. 1, 2). They differ at once from *Calyoza* in having a well-developed first flagellar segment distinctly separated from the second, whereas the first flagellar segment in *Calyoza* is short, broadly joined to the second, forming a ring joint (cf Figs. 2, 4), so that the antennae appear superficially to be only 12-segmented.

The following combination of characters distinguishes *caperata* from its congeners: small size, 2.5 mm long as compared to 5.0–7.0 mm; mandible quinquedentate; pedicel roundly protuberant beneath; pectinations present on flagellar segments 1–7, each shorter than the length of the segment; pronotal disk strongly carinate anterolaterally and with short radiating rugae on median raised area; scutellum anteriorly with lateral pits connected by a deep, narrow groove; and posterior surface of propodeum without a median carina.

Holotype.—♂; Botswana, Serowe, Farmer's Brigade, July 1987, malaise trap, Per Forchhammer (USNM).

Etymology.—From the Latin *caperatus*, wrinkled, in allusion to the distinctive

sculpture of the median part of the pronotal disk (Fig. 3).

Trachepyrus breviscapus (Kieffer)

NEW COMBINATION

Figs. 9–19

Epyris breviscapus Kieffer, 1904: 402–403; (♂; Cape Verde Islands; holotype in Genoa).—Kieffer, 1908: 27 (listed).—Kieffer, 1914: 333 (redescribed in German).

Acanthepyrus spinitarsis Kieffer, 1904: 402 (♀; Portuguese Guinea, now Guinea-Bissau; holotype in Genoa).—Kieffer, 1914: 404 (redescribed in German).

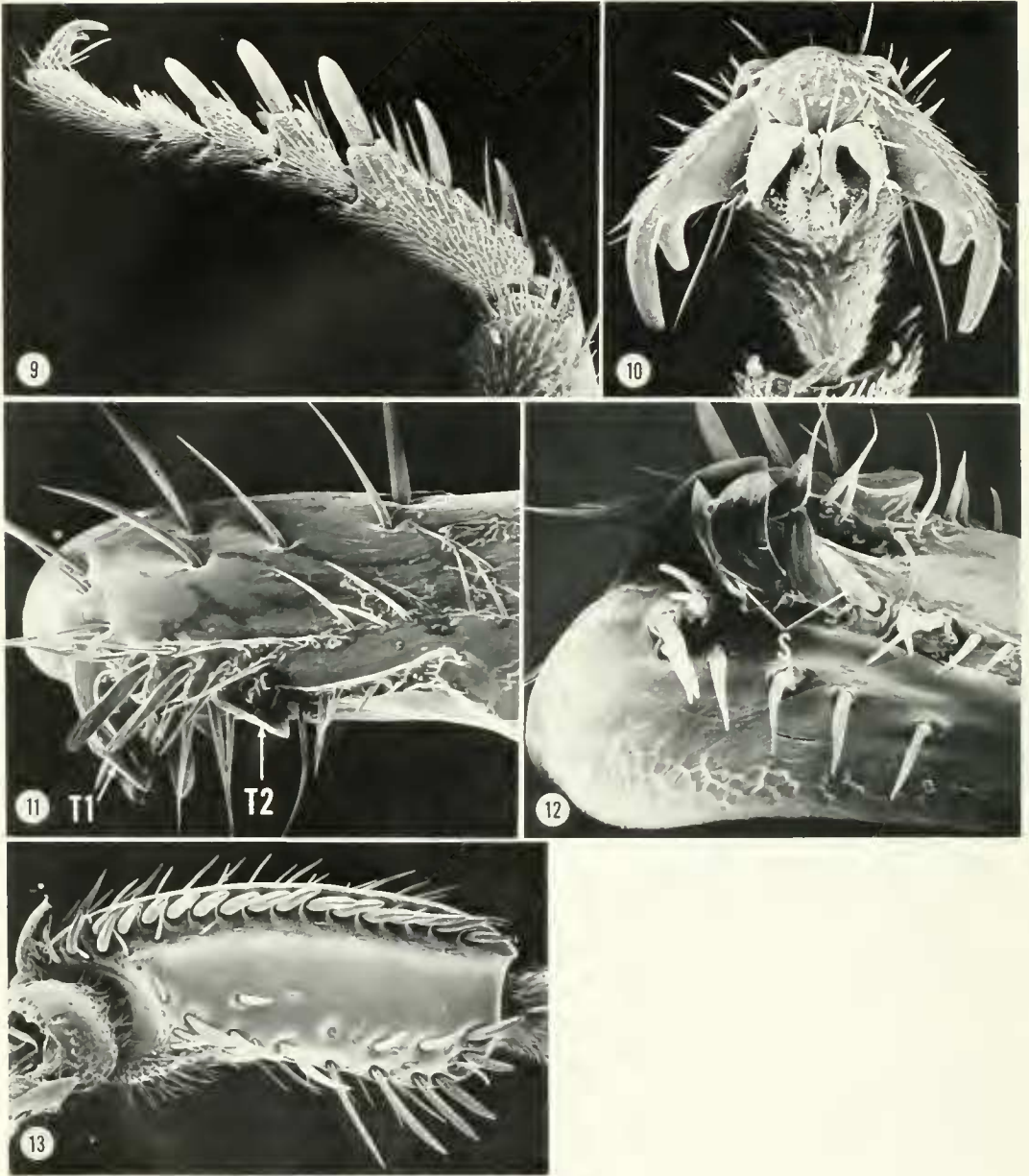
Epyris spinitarsis (Kieffer) Kieffer, 1908: 28 (transferred to *Epyris*).

Acanthepyrus propinquus Turner, 1928: 134–135 (♀; Mossel Bay and Queenstown, South Africa; syntypes in London).

Acanthepyrus breviscapus (Kieffer) Benoit, 1957: 11 (♂; Zaire; synonymized ♀ *spinitarsis* and ♀ *propinquus*).

This relatively common species of *Trachepyrus* occurs from the Cape Verde Islands eastward to eastern Zaire and southward to Botswana and South Africa. Specimens were not available when I prepared a paper on the Ceylonese *Trachepyrus* (Krombein 1987), so I take this opportunity to make the generic transfer and a description supplemented by scanning electron micrographs. References in the description, e.g. (Krombein 1987, Fig. 5), contrast the condition in *haemorrhoidalis* (Kieffer) with that in *breviscapus*.

Female.—Length 6.1–8.1 mm, forewing 3.7–4.3 mm. Black, the following light red: mandible except base and inner and outer margins, antenna except apical segments infuscated above, legs variable, mid and hind coxae and rest of all legs light red, or only the tarsi light red, rest of legs light to dark brown, first four abdominal segments black except occasionally apical two-thirds or half of fourth, and all of fifth and sixth segments

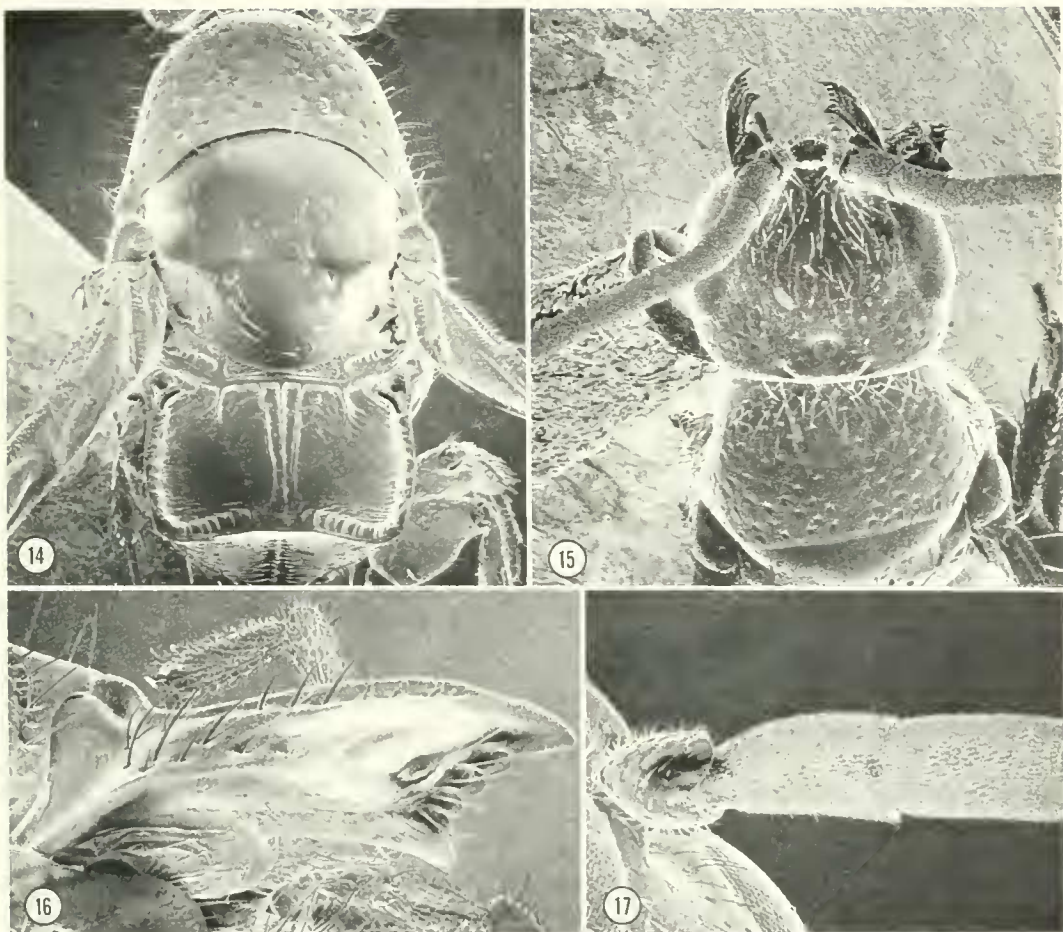


Figs. 9-13. *Trachepyris breviscapus* (Kieffer), female. 9, Foretarsus, 85 \times ; 10, foretarsal claws, 215 \times ; 11, mandible, apical half, outer surface, 215 \times ; 12, mandible, apical half, inner surface, 215 \times ; 13, scape, upper surface, 115 \times .

light red. Wings clear to slightly infumated, stigma medium brown, veins lighter brown.

Head shining above, delicately alutaceous, WH 1.20-1.23 \times LH, not carinate posterolaterally, posterior margin broadly

and slightly incurved; apical half of mandible (dorsal, Fig. 11, ventral, Fig. 12) rounded at apex, inner margin with a long, relatively slender subapical tooth (T1) and a shorter, blunt tooth (T2) somewhat basad,

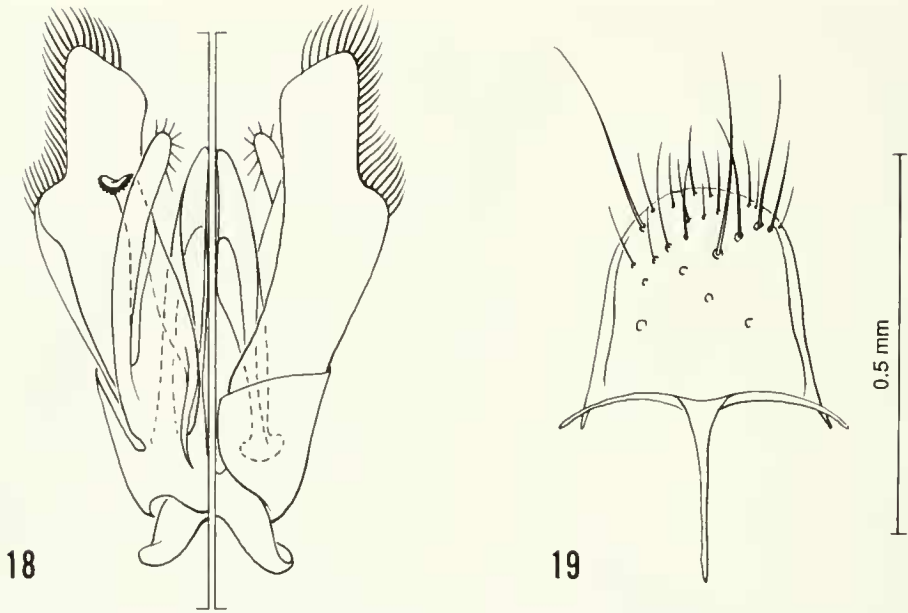


Figs. 14–17. *Trachepyrus breviscapus* (Kieffer), male. 14, Dorsum of thorax, 30 \times ; 15, head and pronotum, 30 \times ; 16, mandible, 150 \times ; 17, antenna, basal segments, 75 \times .

four modified, flattened sensilla chaetica (S) on ventral surface below subapical tooth; clypeus short, raised along midline but not carinate, apical margin of lobe rounded but with narrow emargination in middle; WF 1.52–1.61 \times HE and 0.69–0.71 \times WH; front with or without a short, weak median groove anteriorly, usually with small, scattered punctures mostly separated from each other by twice or more a puncture diameter, the punctures rarely somewhat deeper and less separated; scape (Fig. 13) 2.75 \times as long as wide, longer than in *haemorrhoidalis* (Krombein 1987, Fig. 5), upper surface

rather flattened and smooth, margined anteriorly by a row of stout, short bristles that are denser than in *haemorrhoidalis* and posteriorly by sparser, longer bristles; ocelli small, posterior pair almost at hind margin of head, OOL 1.31–1.46 \times WOT, front angle of ocellar triangle about 90 $^\circ$.

Thoracic dorsum delicately alutaceous except propodeal disk glossy; pronotum not carinate anteriorly or laterally, impunctate in middle, elsewhere with punctures of moderate size separated by once or twice the diameter of a puncture; scutum and scutellum practically impunctate; dorsal pro-



Figs. 18, 19. *Trachepyrus breviscapus* (Kieffer), male. 18, Genitalia, ventral aspect at left, dorsal at right; 19, subgenital plate.

podeal surface $0.57\times$ as long as wide, central area with five longitudinal carinae, the two lateral pairs converging gradually posteriorly, median and lateral carinae reaching margin, intervening pair almost reaching margin, areas between carinae with transverse carinules; posterior surface with complete median carina; forefemur $1.96\text{--}2.00\times$ as long as wide, stouter than in *haemorrhoidalis* ($2.2\times$ as long as wide); foretarsus (Fig. 9) with pecten about as in *haemorrhoidalis*; tarsal claw cleft (Fig. 10), inner ray shorter than in *haemorrhoidalis* (Krombein 1987, Fig. 8); costa with short setae only, transverse median with short stub.

Male.—Length 4.8–6.1 mm, forewing 3.1–3.6 mm. Coloration almost like that of female except mandibular teeth also dark, legs except coxae usually light red, mid and hind femora infrequently medium brown, and seventh abdominal segment also light red.

Head glossy, in frontal view (Fig. 15), WH $1.08\text{--}1.21\times$ LH, not carinate posterolaterally, posterior margin slightly rounded out; mandible (Fig. 16) quinquedentate, upper

and lower teeth longer than three rounded intermediate teeth; clypeus raised along midline but not carinate, apex of median lobe rounded; front with a short, weak, median groove from antennal insertions, punctures small, closer anteriorly and separated by about twice a puncture diameter over most of surface; WF $1.04\text{--}1.10\times$ HE and $0.55\times$ WH; ocelli in a low triangle, OOL $1.03\text{--}1.17\times$ WOT, front angle of ocellar triangle about 115° ; antenna with third segment $1.52\text{--}1.55\times$ as long as wide, a bit shorter than fourth (Fig. 17), ratio of first four segments ranging from 20:5:17:20 to 25:5:20:26.

Thoracic dorsum (Fig. 14) glossy; pronotal disk without anterior or lateral carinae, impunctate along a narrow median area, laterally with small punctures separated from each other by one to two puncture diameters; median length of dorsal propodeal surface about half its greatest width, laterally and posteriorly with a crenulate groove adjacent to marginal carina, central area with three to five longitudinal carinae,

the three inner carinae rather close and usually reaching posterior crenulation, lateral pair more separated, often present only anteriorly, curving toward each other when longer but not reaching apex, surface between carinae smooth or with radiating carinules; posterior propodeal surface with complete median carina.

Subgenital plate (Fig. 19); genitalia (Fig. 18).

Remarks.—*T. breviscapus* is rather similar to *haemorrhoidalis* in coloration but is somewhat larger, ♀ 6.1–8.1 mm long compared to 4.7–5.8, ♂ 4.8–6.1 compared to 4.4–4.8, and differs in other details. The female has a relatively longer scape with a row of stout, denser setae anteriorly on upper surface, a stouter forefemur and a shorter inner ray of the tarsal claw. The male genitalia of the two species are quite different, the paramere of *breviscapus* being considerably broader and thinner, and clothed on outer, upper margin with close setae, which are lacking in *haemorrhoidalis* (Krombein 1987, Fig. 19) except for a pair at apex.

Specimens examined (all USNM).—6 ♀, 28 ♂, Botswana, Serowe, Farmer's Brigade, malaise trap, Per Forchhammer, dated as follows: Feb (♀), 18–30 June (♂) and Sep (♂), 1986; Jan (♀), June (♀), Jul (3 ♂), Aug (♀, 2 ♂), Sep (♀, ♂), Oct (♂), Nov (2 ♂) and Dec (♀, 17 ♂), 1987. Dates of collection suggest that

seasonal activity begins in June and extends through February.

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